

CLAIMS

1. (Currently amended) An atmospheric pressure plasma assembly (1) comprising a first and second pair of vertically arrayed, parallel spaced-apart planar electrodes (36) with at least one dielectric plate (31) between ~~said the~~ first pair, adjacent one electrode and at least one dielectric plate (31) between ~~said the~~ second pair adjacent one electrode, the spacing between the dielectric plate and the other dielectric plate or electrode of each of the first and second pairs of electrodes forming a first and second plasma ~~region~~ regions (25,60) characterised in that the assembly further comprises a means of transporting a substrate (70,71,72) successively through ~~said the~~ first and second plasma regions (25,60) and an ~~atomiser~~ atomizer (74) adapted to introduce an ~~atomised~~ atomized liquid or solid coating making material into one of ~~said the~~ first or second plasma regions.
2. (Currently amended) An assembly in accordance with claim 1 wherein the substrate is transported through ~~said the~~ first and second plasma regions by means of at least one of guide rollers and ~~or~~ guide reels (70, 71, 72).
3. (Currently amended) An assembly in accordance with ~~any preceding claim~~ claim 1 wherein each electrode comprises an electrode unit containing an electrode (36), an adjacent dielectric plate (31) and a cooling liquid distribution system (20,26) for directing a cooling conductive liquid onto the exterior of the electrode (36) to cover a planar face of the electrode (36).
4. (Original) An assembly in accordance with claim 3 wherein the cooling conductive liquid is water.
5. (Currently amended) An assembly in accordance with claim 3 ~~or 4~~ wherein the electrode unit is in the form of a watertight box (20, 20a, 26) having a side formed by a dielectric plate (31) having bonded thereto, on the interior of the

box (20,20a, 26), a planar electrode (36) together with a liquid inlet (14) and a liquid outlet (15).

6. (Currently amended) An assembly in accordance with ~~any preceding claim~~
claim 1 ~~retained in~~ further comprising an outer casing in which a lid (76) is provided to prevent escape of a process gas which is required in order to activate ~~[[the]]~~ a plasma.
7. (Currently amended) An assembly in accordance with ~~any preceding claim~~
claim 1 wherein the atomizer (74) is an ultrasonic nozzle.
8. (Currently amended) An assembly in accordance with ~~any preceding claim~~
claim 1 wherein the electrode (36) is a dielectric with a metallic coating.
9. (Currently amended) An atmospheric pressure glow discharge assembly in accordance with ~~any preceding claim~~ claim 1.
10. (Currently amended) An atmospheric plasma assembly for preparing multilayer coatings upon flexible substrates in accordance with ~~any one of claims claim 1 to 9~~ wherein plasma is generated between vertically orientated electrodes (36), which are arranged in series and adapted to enable single pass, multiple treatment or multilayer coatings.
11. (Currently amended) A method of atmospheric plasma treating a substrate comprising using the apparatus described in ~~any preceding claim~~ claim 1, wherein the ~~atomised~~ atomized solid or liquid coating making material is transferred from the ~~atomiser~~ atomizer (74) into the plasma region (60) by means of gravitational feed.
12. (Currently amended) A method in accordance with claim 11 wherein the ~~atomised~~ atomized solid or liquid coating material is introduced into the plasma region in the absence of a carrier gas.

13. (Currently amended) A method in accordance with claim 11 ~~or 12~~ wherein the substrate is selected from at least one of synthetic ~~fibers~~ and/or, natural-
~~fibres~~ fibers, woven or non-woven-~~fibres~~ fibers, powder, siloxane, fabrics,
~~woven or non-woven fibres, natural fibres, synthetic fibres~~ cellulosic material-
material, and ~~and~~ powder or a blend of an organic polymeric material and an organosilicon-containing additive.
14. (Currently amended) A method of atmospheric plasma treating a substrate comprising, transporting a substrate through an atmospheric pressure plasma assembly in accordance with ~~any one of claims 1 to 10~~ claim 1 upwardly through one plasma region (25,60) and downwardly though the other plasma region (25,60).
15. (Currently amended) A method in accordance with ~~any one of claims 11 to 14~~ claim 11 wherein the first plasma region (25) through which the substrate passes is a cleaning plasma and the second plasma region (60) through which the substrate passes effects a coating on the substrate by means of the ~~atomised~~ atomized liquid or solid coating forming material.
16. (Currently amended) A method in accordance with claim 15 wherein the gravitational feed of the ~~atomised~~ atomized liquid or solid coating forming material into the second plasma region (60) prevents transfer of ~~said the~~ the ~~atomised~~ atomized liquid or solid coating forming material into the first plasma region (25).
17. (Currently amended) A method in accordance with ~~any one of claims 11 to 16~~ claim 11 wherein, ~~in use,~~ the temperature of the assembly is maintained in the range of from room temperature to 70° C.
18. (Original) A treated substrate obtainable in accordance with the method as described in ~~any one of claims~~ claim 11 to 17.

19. (Cancelled)

20. (Cancelled)

21. (Cancelled)

22. (Cancelled)

23. (Cancelled)

24. (Cancelled)

25. (New) An assembly in accordance with claim 1, further comprising at least one additional pair of vertically orientated electrodes (36) situated before or after the first and second pairs of electrodes.